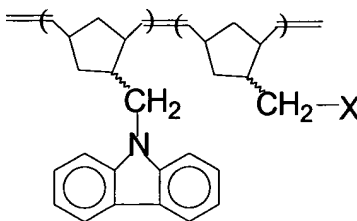


## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the subject Patent Application:

### Listing of Claims:

1. (Original) A diblock macroinitiator containing norborene and carbazole segments comprising the formula (I):

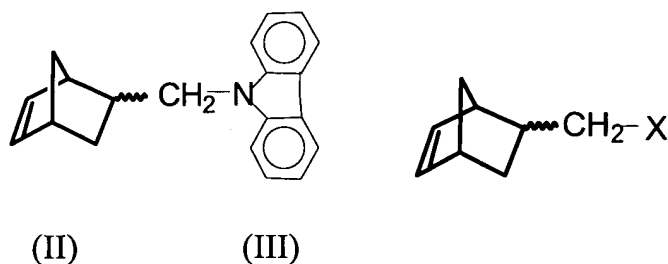


(I)

wherein, X is one selected from a group consisting of Br and Cl.

2. (Currently Amended) The diblock macroinitiator according to claim 1, wherein, said diblock macroinitiator is prepared from a mixture of carbazole-containing norbornene [[-type]] monomer (II) in the presence of catalyst *via* ring-opening metathesis polymerization, an additional norbornene derivative(III) is

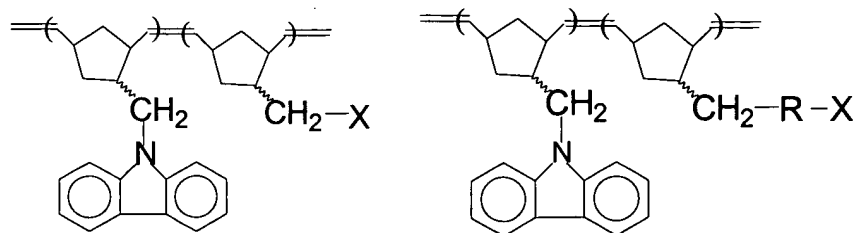
added into the mixture after 15\_ [[~]]120 mins of commencing ring-opening metathesis polymerization and said diblock macroinitiator is obtained, wherein,



wherein, X is one selected from a group consisting of Br and Cl.

3. (Original) The diblock macroinitiator according to claim 2, wherein, said metathesis catalyst is  $\{\text{Cl}_2\text{Ru}(\text{CHPh})[\text{P}(\text{C}_6\text{H}_{11})_3]_2\}$ .

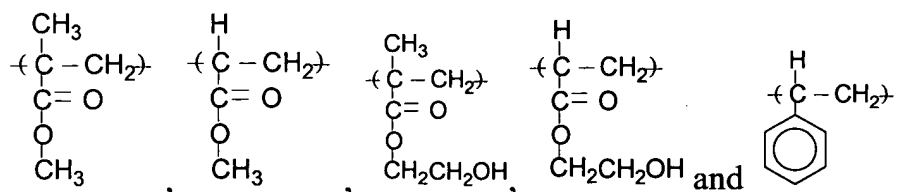
4. (Original) A polynorbornene-containing grafted copolymer comprising the formula (IA), which is prepared by using a diblock macroinitiator with the formula (I):



(I) (IA)

wherein, X is one selected from a group consisting of Br and Cl; and

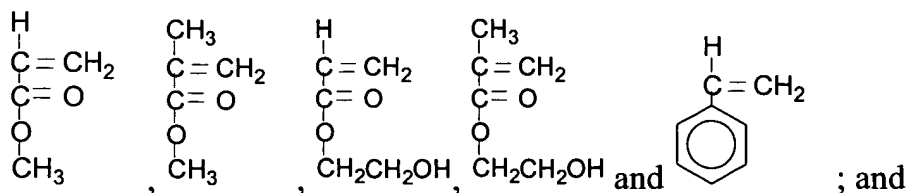
R is one selected from a group consisting of



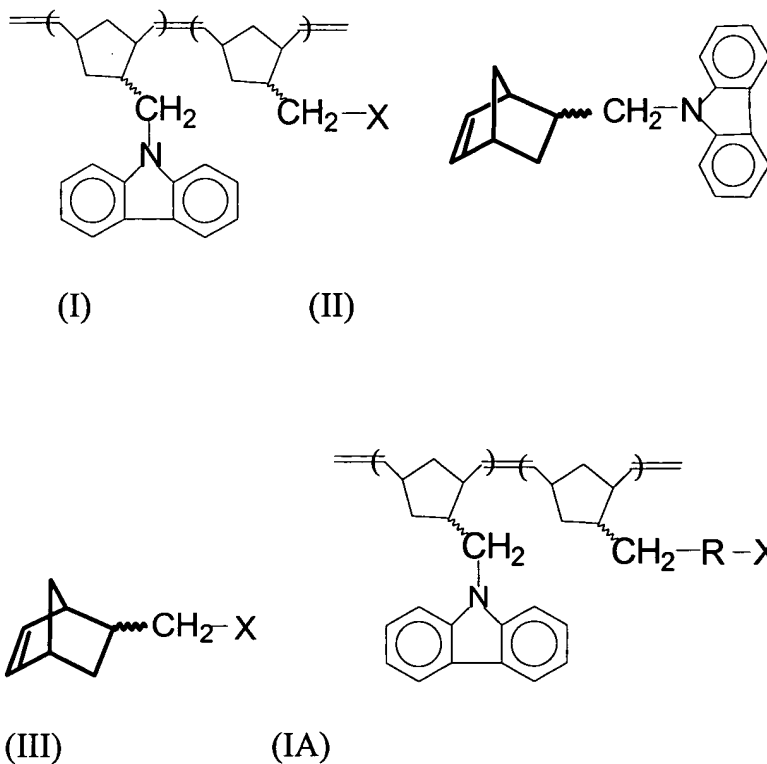
5. (Currently Amended) A method for preparing a grafted polynorbornene with the formula (IA) comprises of following steps :

a)Preparation of a macroinitiator with the formula (I) by means of reaction of cabazole-containing norbornene [[-type]] monomer (II) and a catalyst *via* ring-opening metathesis polymerization and addition of additional norbornene derivative(III) into the mixture after 15~120 mins of commencing ring-opening metathesis polymerization;

b)preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (I) and a monomer selected from a group consisting of

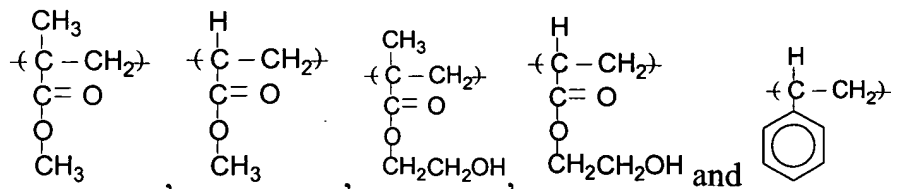


c) preparation of said grafted polynorbornene copolymer with the formula (IA) by means of a graft copolymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,

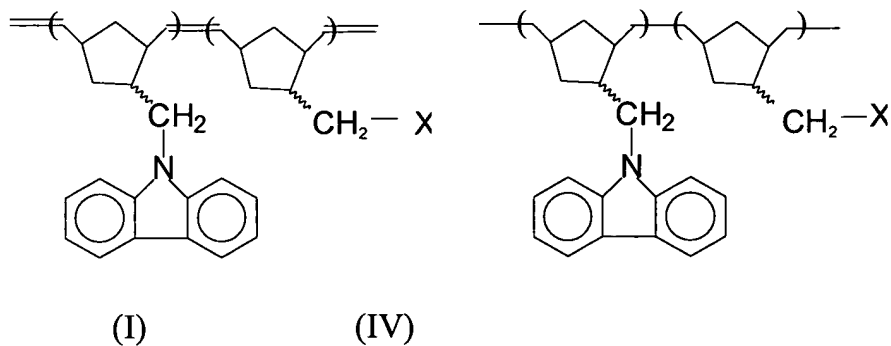


wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of

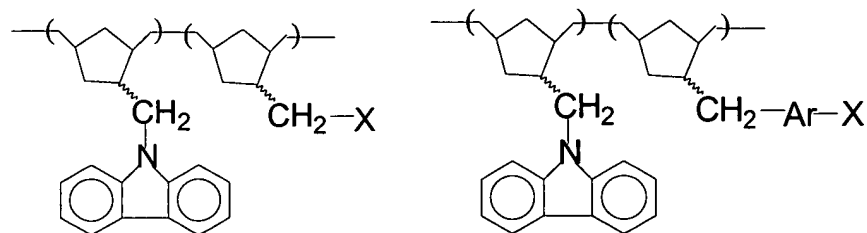


6. (Withdrawn) A thermally-stable saturated cyclic aliphatic diblock macroinitiator comprising the formula (IV), which is prepared by hydrogenating a diblock macroinitiator with the formula (I):



wherein, X is one selected from a group consisting of Br and Cl.

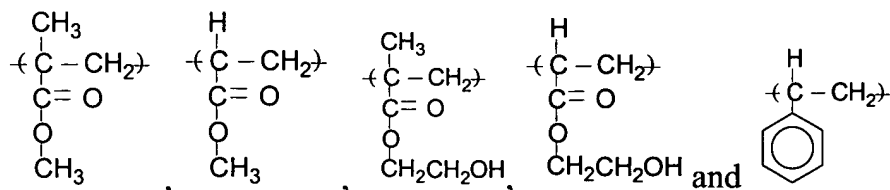
7. (Withdrawn) A polynorbornene-containing grafted copolymer comprising the formula (IVA), which is prepared by graft copolymerization by using a diblock macroinitiator with the formula (IV):



(□) (□A)

wherein, X is one selected from a group consisting of Br and Cl; and

Ar is one selected from a group consisting of

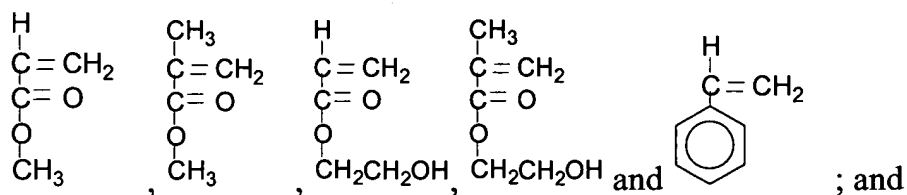


8. (Withdrawn) A Method for preparing a grafted polynorbornene with the formula (IVA) comprises of following steps:

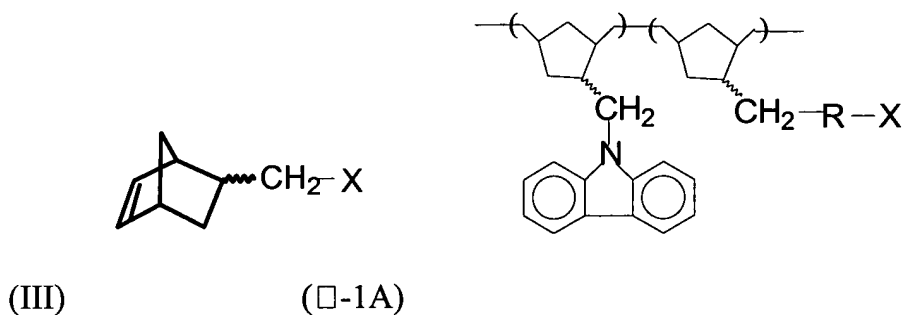
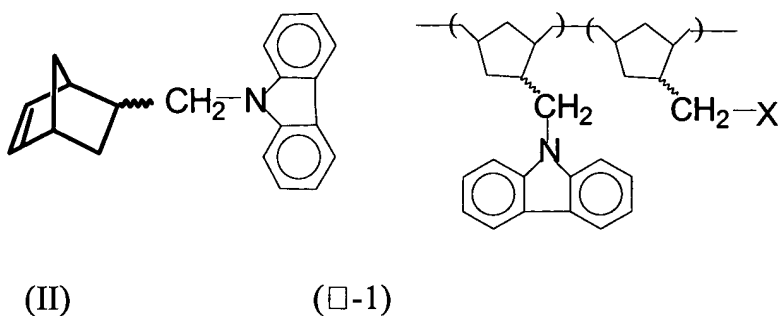
a) Preparation of a macroinitiator with the formula (I) by means of reaction of cabazole-containing norbornene-type monomer (II) and a catalyst *via* ring-opening metathesis polymerization and an additional norbornene dervative(III) was added into the mixture after 15~120 mins commencing of ring-opening metathesis polymerization;

b) hydrogenation of said diblock macroinitiator with the formula (I) to prepare a thermally-stable saturated cyclic aliphatic diblock macroinitiator with the formula (IV);

c) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said thermally-stable saturated cyclic aliphatic diblock macroinitiator (IV) and a monomer selected from a group consisting of

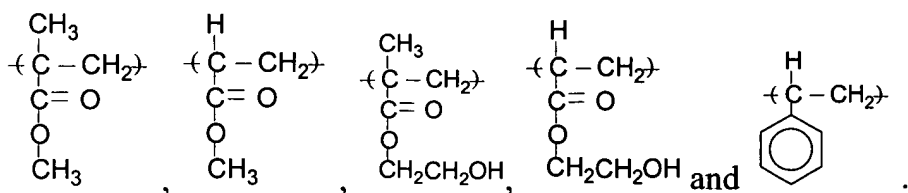


d) preparation of said grafted polynorbornene copolymer with the formula (IVA) by means of a graft copolymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,

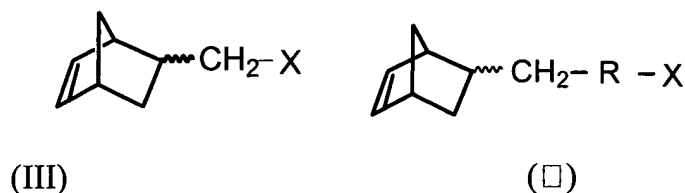


wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of

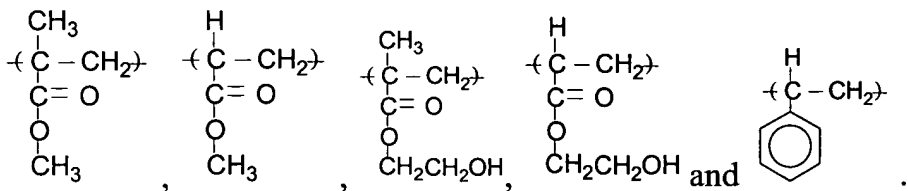


9. (Withdrawn) A norbornene-containing macromonomer comprising the formula (V), which is prepared by using a norbornene end group-containing initiator with the formula (III):



wherein, X is one selected from a group consisting of Br and Cl; and

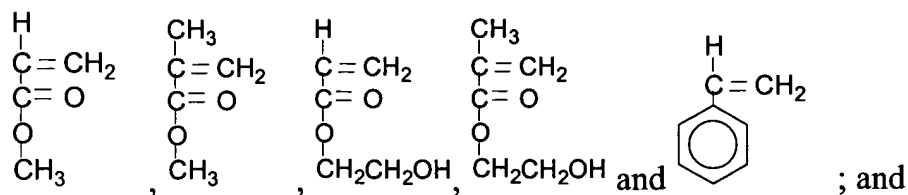
R is one selected from a group consisting of



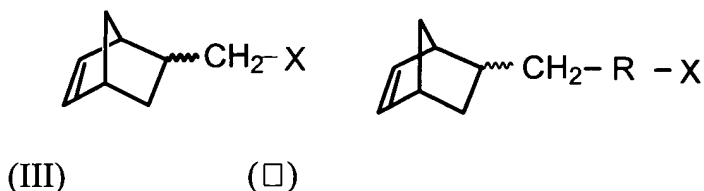
10. (Withdrawn) A method for preparing a norbornene end group-containing macromonomer with the formula (V) comprises of following steps:

a) Preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, a norbornene-type initiator (III) and a monomer selected from a group consisting of



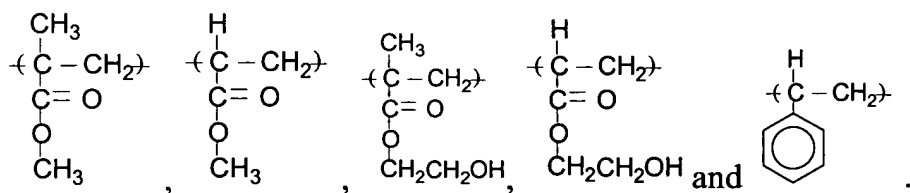


b) preparation of said norbornene end group-containing macromonomer with the formula (V) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,



wherein, X is one selected from a group consisting of Br and Cl; and

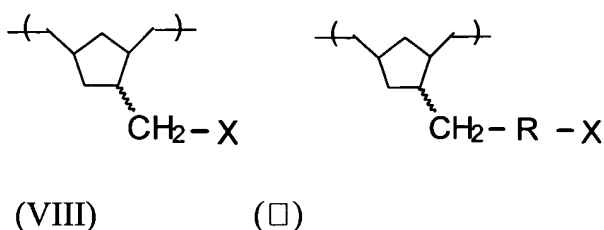
R is one selected from a group consisting of



11. (Withdrawn) A norbornene-type macroinitiator comprising the formula (VI), which is prepared by using a catalyst and a norbornene-type derivative with the formula (III) *via* ring-opening metathesis polymerization:

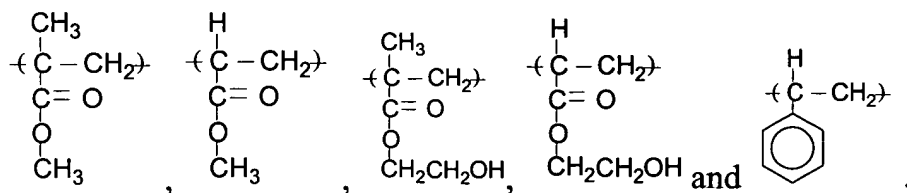


saturated cyclic aliphatic macroinitiator with the formula (VIII) *via* graft copolymerization :



wherein, X is one selected from a group consisting of Br and Cl; and

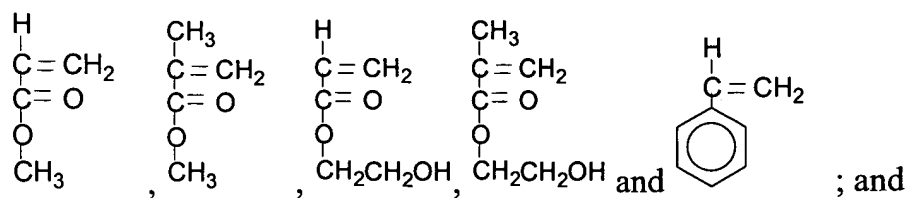
R is one selected from a group consisting of



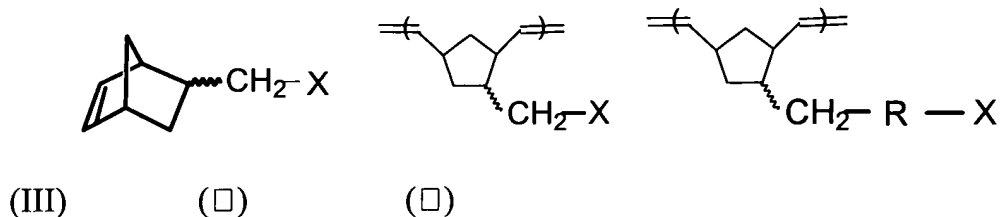
14. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (VII) comprises of following steps:

a) Polymerization a norbornene monomer with the formula (III) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (VI);

b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VI) and a monomer selected from a group consisting of

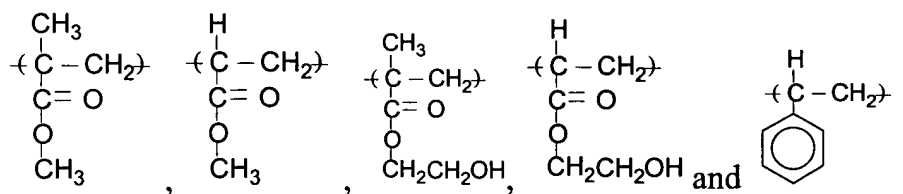


c) preparation of said grafted polynorbornene copolymer with the formula (VII) by means of a graft copolymerization of said mixture at various temperatures ranged from 70 to 150 °C, wherein,



wherein, X is one selected from a group consisting of Br and Cl; and

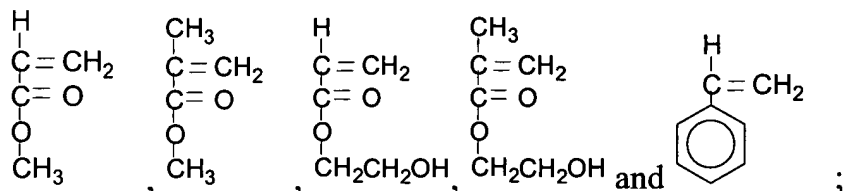
R is one selected from a group consisting of



15. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (IX) comprises of following steps:

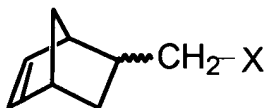
a) Polymerization of a norbornene monomer with the formula (III) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (VI);

b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VI) and a monomer selected from a group consisting of

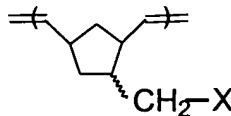


c) hydrogenation of said macroinitiator with the formula (VII) to prepare a thermally-stable saturated cyclic aliphatic macroinitiator with the formula (VIII);  
 and

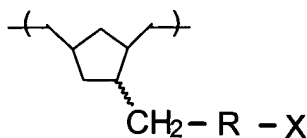
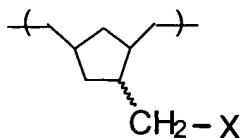
d) preparation of a grafted polynorbornene with the formula (IX) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,



(III)



(IV)

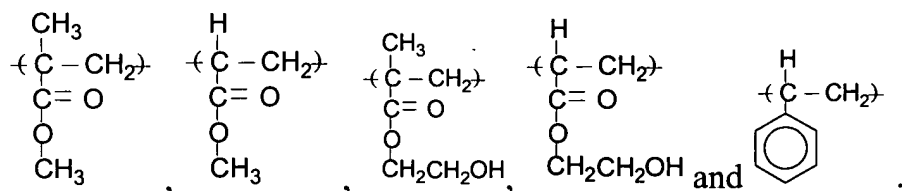


(□II)

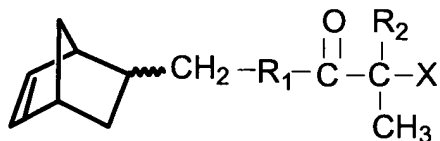
(□)

wherein, X is one selected from a group consisting of Br and Cl; and

R is one selected from a group consisting of



16. (Withdrawn) A norbornene-type compound containing bromo-end group, having the formula (XI):



(XI)

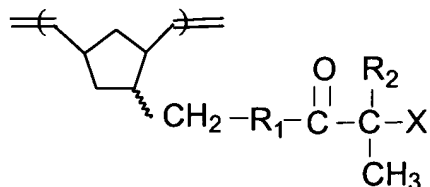
wherein, X is Br or Cl ;

R<sub>1</sub> is -NH- , -O- , -(CH<sub>2</sub>)<sub>n</sub>-NH- , or -(CH<sub>2</sub>)<sub>n</sub>-O-,

wherein, n denotes an integer of 1 to 4; and

R<sub>2</sub> is H or -CH<sub>3</sub>.

17. (Withdrawn) A polynorbornene-type macroinitiator containing halogen-side group, having the formula (XII):



(XII)

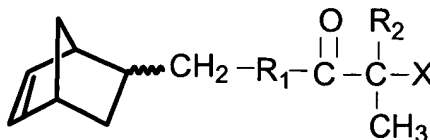
wherein, X is Br or Cl ;

R<sub>1</sub> is -NH- , -O- , -(CH<sub>2</sub>)<sub>n</sub>-NH- , or -(CH<sub>2</sub>)<sub>n</sub>-O- ,

wherein, n denotes an integer of 1 to 4.; and

R<sub>2</sub> is H or -CH<sub>3</sub> .

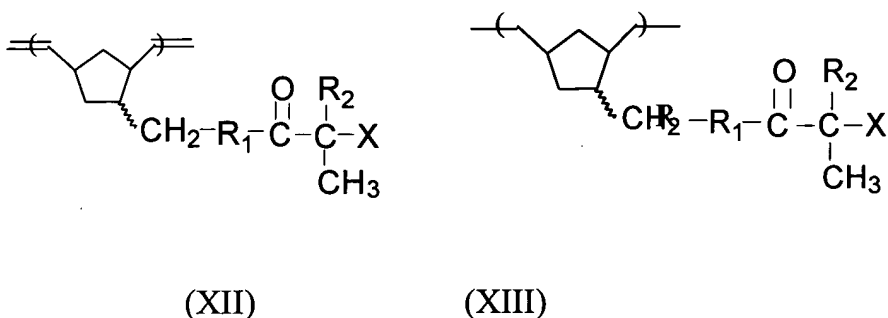
18. (Withdrawn) The macroinitiator according to claim 17, wherein, said macroinitiator is prepared from a halogen-containing norbornene-type compound (XI) in the presence of catalyst *via* ring-opening metathesis polymerization, wherein, .



(XI)

19. (Withdrawn) The macroinitiator according to claim 18, wherein, said metathesis catalyst is  $\{\text{Cl}_2\text{Ru}(\text{CHPh})[\text{P}(\text{C}_6\text{H}_{11})_3]_2\}$ .

20. (Withdrawn) A thermally-stable saturated cyclic aliphatic macroinitiator comprising the formula (XIII), which is prepared by hydrogenating a macroinitiator with the formula (XII):



wherein, X is Br or Cl ;

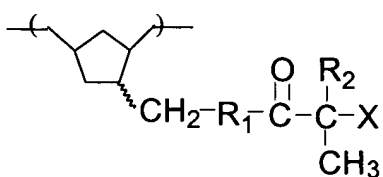
$\text{R}_1$  is -NH- , -O- ,  $-(\text{CH}_2)_n\text{-NH-}$  or  $-(\text{CH}_2)_n\text{-O-}$  ,

wherein, n denotes an integer of 1 to 4 ; and

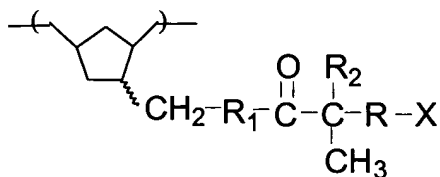
$\text{R}_2$  is H or  $-\text{CH}_3$ .

21. (Withdrawn) A grafted polynorbornene copolymer comprising the formula (XIV), which is prepared by using a macroinitiator with the formula (XIII) *via* graft copolymerization:





(XIII)



(XIV)

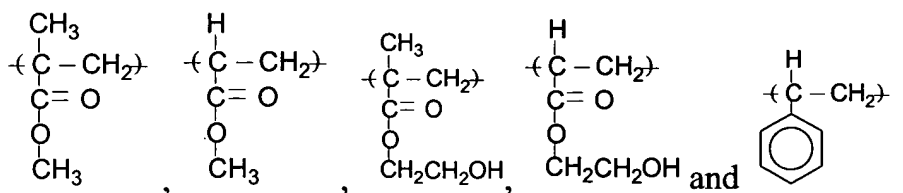
wherein, X is Br or Cl;

R<sub>1</sub> is -NH-, -O-, -(CH<sub>2</sub>)<sub>n</sub>-NH-, or -(CH<sub>2</sub>)<sub>n</sub>-O-,

wherein, n denotes an integer of 1 to 4 ;

R<sub>2</sub> is H or -CH<sub>3</sub>; and

R is one selected from a group consisting of

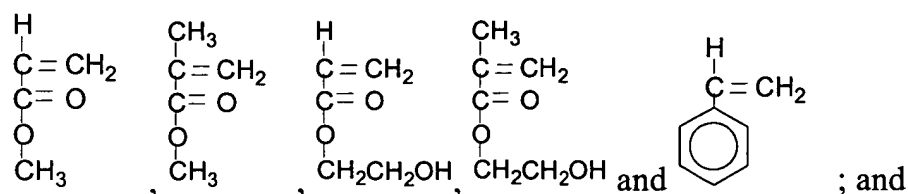


22. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (XIV) comprises of following steps:

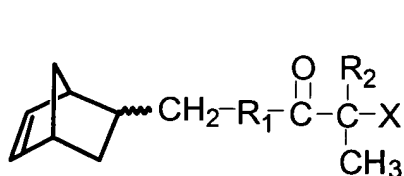
a) Polymerization of a norbornene monomer with the formula (XI) by using a catalyst *via* ring-opening metathesis polymerization to obtain a macroinitiator with the formula (XII);

b) hydrogenation of said macroinitiator with the formula (VII) to prepare a thermally-stable saturated cyclic aliphatic macroinitiator with the formula (VIII);

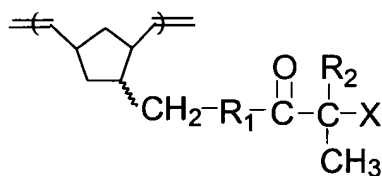
c) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said thermally-stable saturated cyclic aliphatic macroinitiator (VIII) and a monomer selected from a group consisting of



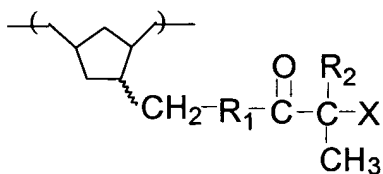
d) preparation of a grafted polynorbornene with the formula (XIV) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,



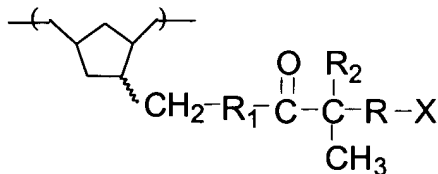
(XI)



(XII)



(XIII)



(XIV)

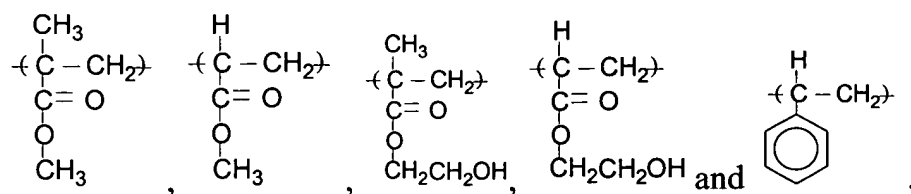
wherein, X is Br or Cl;

R<sub>1</sub> is -NH-, -O-, -(CH<sub>2</sub>)<sub>n</sub>-NH- or -(CH<sub>2</sub>)<sub>n</sub>-O-,

wherein, n denotes an integer of 1 to 4 ;

R<sub>2</sub> is H or -CH<sub>3</sub>; and

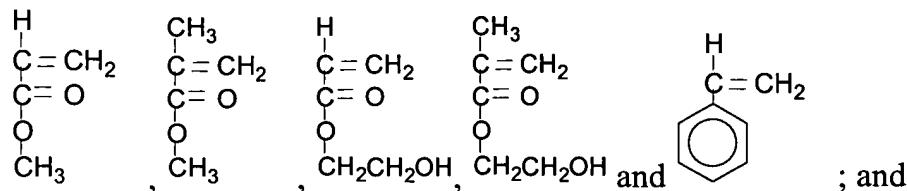
R is one selected from a group consisting of



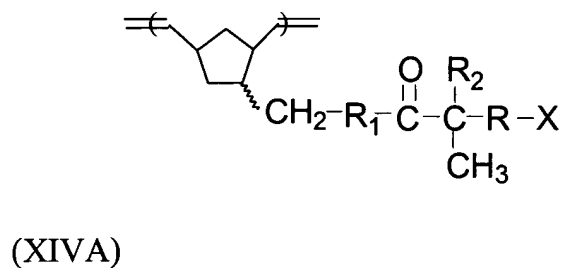
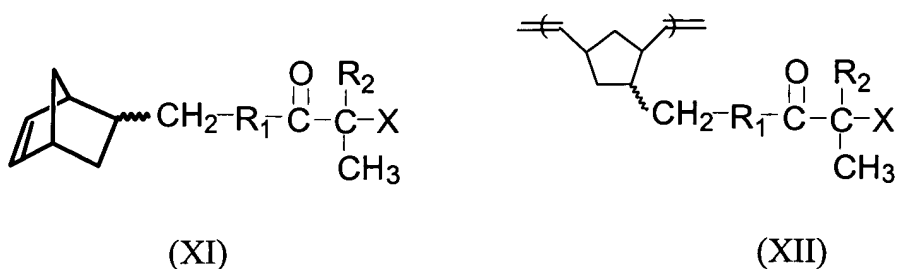
23. (Withdrawn) A method for preparing grafted polynorbornene copolymer with the formula (XIVA) comprises of following steps:

a) Polymerization of a norbornene monomer with the formula (XI) by using a catalyst *via* ring-opening metathesis polymerization, to obtain a macroinitiator with the formula (XII);

b) preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, said macroinitiator (VII) and a monomer selected from a group consisting of



c) preparation of a grafted polynorbornene with the formula (XIVA) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,



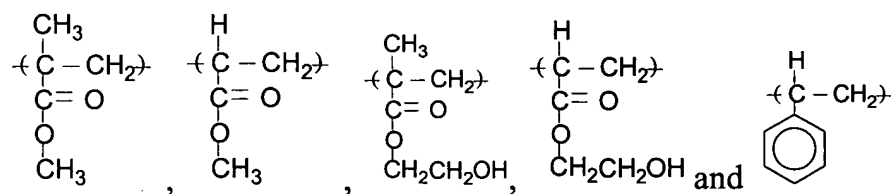
wherein, X is Br or Cl;

R<sub>1</sub> is -NH-, -O-, -(CH<sub>2</sub>)<sub>n</sub>-NH-, or -(CH<sub>2</sub>)<sub>n</sub>-O-,

wherein, n denotes an integer of 1 to 4 ;

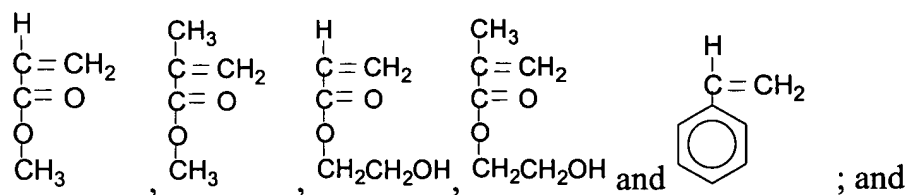
R<sub>2</sub> is H or -CH<sub>3</sub>; and

R is one selected from a group consisting of

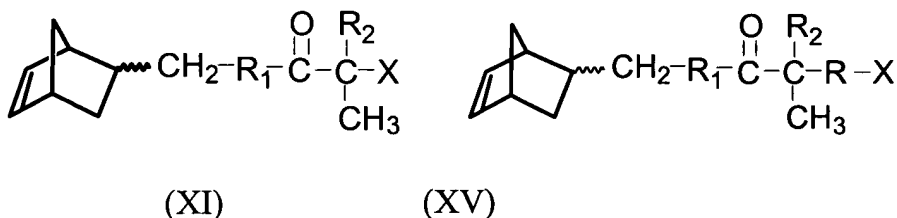


24. (Withdrawn) A method for preparing norbornene end group-containing macromonomer with the formula (XV) comprises of following steps:

a) Preparation of a mixture of Cu(I)Br, 2,2'-bipyridine, a norbornene derivative (XI) and a monomer selected from a group consisting of



b) preparation of a norbornene end group-containing macromonomer with the formula (XV) by means of radical polymerization of said mixture at various temperatures ranged from 50 to 150 °C, wherein,



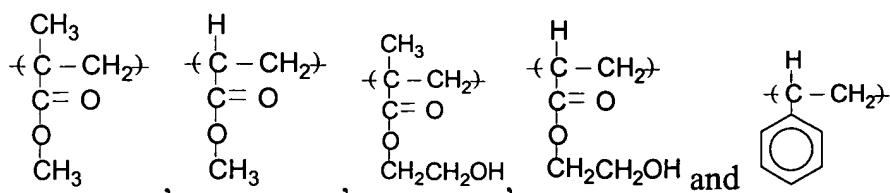
wherein, X is Br or Cl;

R<sub>1</sub> is -NH-, -O-, -(CH<sub>2</sub>)<sub>n</sub>-NH-, or -(CH<sub>2</sub>)<sub>n</sub>-O-,

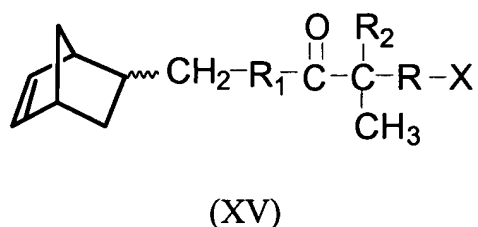
wherein, n denotes an integer of 1 to 4 ;

R<sub>2</sub> is H or -CH<sub>3</sub>; and

R is one selected from a group consisting of



25. (Withdrawn) A norbornene end group-containing macromonomer comprises of formula (XV):



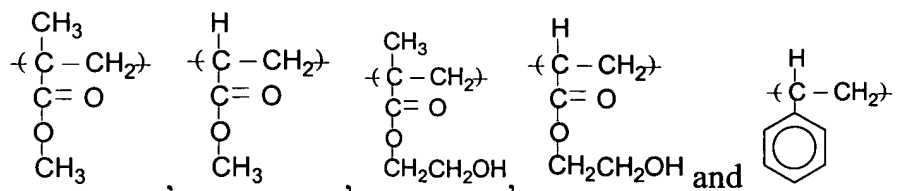
wherein, X is Br or Cl;

R<sub>1</sub> is -NH-, -O-, -(CH<sub>2</sub>)<sub>n</sub>-NH-, or -(CH<sub>2</sub>)<sub>n</sub>-O-,

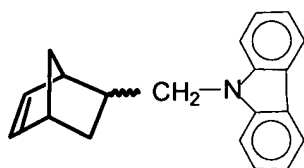
wherein, n denotes an integer of 1 to 4 ;

R<sub>2</sub> is H or -CH<sub>3</sub>; and

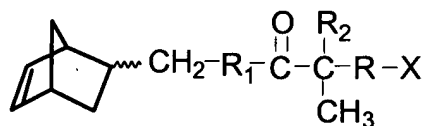
R is one selected from a group consisting of







(II)



(XV)

wherein, X is Br or Cl;

$R_1$  is  $-NH-$ ,  $-O-$ ,  $-(CH_2)_n-NH-$ , or  $-(CH_2)_n-O-$ ,

wherein, n denotes an integer of 1 to 4 ;

$R_2$  is H or  $-CH_3$ ; and

R is one selected from a group consisting of

